## LISTING OF CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application. Claims 1, 2, 3, 5 and 6 are currently submitted for amendment, and claim 4 is currently submitted for cancellation.

1. (CURRENTLY AMENDED) A hydroprocessing process, comprising:

contacting a feedstock, at hydrotreating conditions, with a bulk multimetallic catalyst ~~comprised of at least one group VIII non-noble metal and at least two GroupVIB metals and wherein the ratio of GroupVIB metal to Group VIII non-noble metal is from about 10:1 to about 1:10 to form a hydrotreated product.~~ represented by the formula:

$$(X)_b (Mo)_c (W)_d O_z$$

wherein X is a Group VIII non-noble metal, and the molar ratio of b: (c+d) is 0.5/1 to 3/1.

2. (CURRENTLY AMENDED) The process of claim 1 wherein the ~~said at least one~~ Group VIII non-noble metal is at least one ~~selected from the group consisting~~ of Ni and Co. ~~and the Group VIB metals are selected from the group consisting of Mo and W.~~

3. (CURRENTLY AMENDED) The process of claim 1 wherein ~~said at least two Group VIB metals are Mo and W and~~ the ratio of Mo to W is from about 9:1 to about 1:9.

4. (CURRENTLY CANCELLED)

5. (CURRENTLY AMENDED) The process of claim 1 4 wherein said molar ratio of b:(c+d) is 0.75/1 to 1.5/1.

6. (CURRENTLY AMENDED) The process of claim 1 4 wherein said molar ratio of c:d is >0.01/1.

7. (PREVIOUSLY AMENDED) The process of claim 1 further comprising sulfiding a multimetallic oxide precursor to form said bulk multimetallic catalyst, wherein the precursor comprises essentially an amorphous material having a unique X-ray diffraction pattern showing crystalline peaks at d = 2.53 Angstroms and D = 1.70 Angstroms.

8. (PREVIOUSLY AMENDED) The process of claim 1 wherein said feedstock comprises at least one of naphtha, diesel, heavy gas oil, lube oil, and residuum virgin distillates.

9. (PREVIOUSLY AMENDED) The process of claim 1 wherein said feedstock comprises naphtha boiling in the range of 25°C to 210°C, and said hydrotreating conditions include a reaction temperature of 100°C to 370°C, a pressure of 10 Bar to 60 Bar, a space velocity of 0.5 to 10 V/VHr, and a hydrogen gas treat rate of 100 to 2,000 SCF/B.

10. (PREVIOUSLY AMENDED) The process of claim 1 wherein said feedstock comprises diesel boiling in the range of 170°C to 350°C, and said hydrotreating conditions include a reaction temperature of 200°C to 400°C, a pressure of 15 Bar to 110 Bar, a space velocity of 0.5 V/V/Hr to 4 V/V/Hr, and a hydrogen gas treat rate of 500 SCF/B to 6,000 SCF/B.

11. (PREVIOUSLY AMENDED) The process of claim 1 wherein said feedstock comprises heavy gas oil boiling in the range of 325°C to 475°C, and wherein said hydrotreating conditions include a reaction temperature of 260°C to 430°C, a pressure of 15 Bar to 170 Bar, a space velocity of 0.3 V/V/Hr to 2 V/V/Hr, and a hydrogen gas treat rate of 1,000 SCF/B to 6,000 SCF/B.

12. (PREVIOUSLY AMENDED) The process of claim 1 wherein said feedstock comprises a lubricating oil boiling in the range of 290°C to 550°C, and wherein said hydrotreating conditions include a reaction temperature of 200°C to 450°C, a pressure of 6 Bar to 210 Bar, a space velocity of 0.2 V/V/Hr to 5 V/V/Hr, and a hydrogen gas treat rate of 100 SCF/B to 10,000 SCF/B.

13. (PREVIOUSLY AMENDED) The process of claim 1 wherein said feedstock comprises a residuum having a 10% to 50% boiling range of 575°C, and wherein said hydrotreating conditions include a reaction temperature of 340°C to 450°C, a pressure of 65 Bar to 1100 Bar, a space velocity of 0.1 V/V/Hr to 1 V/V/Hr, and a hydrogen gas treat rate of 2,00 SCF/B to 10,000 SCF/B.

14. (PREVIOUSLY AMENDED) The process of claim 1 wherein the bulk multi-metallic catalyst comprises particles having a median diameter of at least 50 nm, a surface area of at least 10 $m^2$/gm, a pore volume ranging from 0.05 to 5 ml.g, and an absence of pores small than 1 nm.

15. (PREVIOUSLY AMENDED) The process of claim 14 wherein said bulk multimetallic catalyst particle comprises a core-shall structure.

16. (PREVIOUSLY CANCELLED)

17. (PREVIOUSLY AMENDED) The process of claim 1 further comprising contacting at least one of said feedstock and hydroprocessed product with a catalytically effective amount of a second catalyst under catalytic conversion conditions.

18. (PREVIOUSLY AMENDED) The process of claim 17 wherein said second catalyst comprises at least one of a hydroprocessing catalyst, a cracking catalyst, and an isomerization catalyst.

19. (PREVIOUSLY AMENDED) The process of claim 18 wherein said second catalyst is present in at least one of

(i) a first reaction zone or zones upstream of said bulk multimetallic catalyst;

(ii) a second reaction zone or zones containing said bulk multimetallic catalyst; and

(iii) a third reaction zone or zones downstream of said bulk multimetallic catalyst.

20. (PREVIOUSLY AMENDED) The process of claim 1 wherein said bulk multimetallic catalyst is a sulfided catalyst.

21. (PREVIOUSLY NEW) The process of claim 1 wherein said bulk multimetallic catalyst is sulfided in-situ.

## REMARKS

The Examiner will note that claim 1 has been amended by incorporating the formula in claim 4 into claim 1.

In the Examiner's comments in the office communication dated July 21, 2003 (paper no. 10), it was noted that the individual components of the catalyst combinations Ni, Co, and Mo are described by the cited references as being suitable for hydrotreating with reference to Sawyer, page 4, 18-30, and Velenyi (see Abstract). Therefore, combining the individual components known for their use and effectiveness in hydrotreating to create applicants' claimed catalyst combination would be obvious to one having ordinary skill in the art.

In response, the combination of Ni, Mo and Co cited by the Examiner is outside the claimed catalyst in amended claim 1, which requires Mo and W (both Group VI metals). While Sawyer does state that the catalysts may be unsupported or supported, Sawyer teaches preparation of supported catalysts only. There is no teaching on the preparation of unsupported catalysts and applicants' catalysts are by definition unsupported (see page 13, lines 21-22). Moreover, they are prepared by a process which at some point involves a solid phase either through solid-phase reactions or formation of a precipitate. The techniques for preparing the conventional catalysts disclosed by Sawyer will not produce applicants' claimed catalysts. Finally, amended claim 1 specifies that the molar ratio of b:(c+d) is from 0.5/1 to 3/1. There is nothing in Sawyer that would teach or suggest this ratio, nor the particular combination of metals represented by amended claim 1.

In the catalyst taught in the Velenyi Abstract, the"A" component is not present in applicants' catalyst and the "M" component covers Cu, Ag, Au, Zn, Cd,

Hg, Ti, Zr, Hf, V, Nb, Ta, Fe, Co, Ni, Y, Cr, Mn, Re, B, In, Ge, Sn, Pb, Th, U and mixtures thereof. There is nothing to lead one skilled in the art to suggest the bulk metal catalyst defined in amended claim 1.

Catalysts have long been recognized as unpredictable by both the Courts and the Board of Appeals (in re: Doumani, 126 USPQ 408 (CCPA, 1960), Ex parte Berger, 108 USPQ 236 (POBA, 1956). In the Doumani case, the Groll patent, at issue, listed a wide variety of metals and metallic compounds suitable for use as catalysts, with more than thirty metals being specifically named as examples. Merely because both Pt and Rh were included in the Groll list did not, in the opinion of the CCPA, necessarily establish any close relationship between them, or indicate a likelihood that they would be generally equivalent as catalysts.

From the general formula for the Velenyi catalyst, one would have to assign a "d" value of zero, "c" a value of not zero, pick non-noble metals from the many metals for "M" ("M" is selected from the group consisting of one or more metals selected from any of Groups IB, IIB, IVB, VB or VIII and/or one of more of Y, Cr, Mn, Re, In, Ge, Sn, Pb, Th or U, or a mixture of two or more of the metals in said group), and then determine applicants' ratio of non-noble Group VIII metal to the sum of Mo+W of b:(c+d) being from 0.5/1 to 3/1.

While the Velenyi disclosure is to a catalyst composition, there is nothing to guide one skilled in the art to the selection and ratios of components in applicants' amended claim as noted above. The fact that Velenyi is drawn to a catalyst and not a process of utilizing a catalyst, and the disclosure does not specifically limit the use of the catalyst to methane conversion, provides no guidance to the person skilled in the art. Because the catalytic art is unpredictable, there is no way to predict what reactions various subsets of components in the

Velenyi catalyst might catalyze. The silence of Velenyi as to other uses will not lead one to the catalyst and process of applicants' amended claim 1.

Moreover, the Velenyi catalyst, because of its stated use for converting gaseous reactants comprising methane and oxygen to higher order hydrocarbons, requires the presence of oxygen as the process is an oxidative reaction (col. 9, lines 12-47). It is very unlikely that one skilled in the art would look to a catalyst to be used under oxidative conditions for use as a hydrotreating catalyst. The introduction of substantial oxygen into a hydrotreater would raise serious safety concerns.

Finally, the Examiner notes that even assuming arguendo that there is no proper motivation to combine Velenyi with Sawyer, the Sawyer reference in and of itself could be used to show obviousness of applicants' claimed combination. It is again noted that applicants' catalysts are not the conventional "well known in the art" catalysts taught by Sawyer. The x-ray diffraction pattern is evidence that the catalyst composition used in applicants' claimed process is unique. The comparisons with conventional hydrotreating catalysts show greatly improved properties, e.g., Examples 5, 9 and page 35, lines 13 et seq.

Based on the preceding arguments and amendments, the Examiner is requested to reconsider and withdraw all objections and rejections and pass this application to allowance. The Examiner is encouraged to contact applicants' attorney should the Examiner wish to discuss this application further.

Respectfully submitted:

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